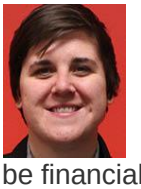
Wisconsin Company to Create Energy from Brewery Waste

Nov 3, 2015 **Megan Greenwalt**

Photo: Adam Berry/Getty Images

The flood of craft beer production in the U.S. in recent years has left beer enthusiasts thirsty for more. Yet brewing beer uses a lot of water and microbreweries across the country are searching for ways to cut down on wastewater costs and utilize the waste produced in the brewing process. A U.S. company in Wisconsin has developed one way to employ anaerobic digestion to solve those problems.

According to the Brewers Association, an American trade group established in 2005 as a merger of the Association of Brewers and the Brewers' Association of America, in 1979 there were 89 breweries in existence in the U.S. That number has soared to 2,413 as of March 2013, with 2,360 considered craft or microbreweries.



Meredith Cummings, application engineer for BIOFerm Energy Systems, says the larger load of high biochemical oxygen demand (BOD)/chemical oxygen demand (COD)-level wastewater created from this increase in brewing—which includes dissolved brewery waste solids like excess malt, yeast and hops—often requires additional wastewater treatment plant (WWTP) infrastructure for processing. Producing more wastewater can be financially burdening for the influx of small breweries charged to dispose of their high BOD/COD waste stream.

BIOFerm Energy Systems, based in Madison, Wis., offers two different anaerobic digesters that are capable of recovering energy from brewery waste and lowering the waste sent to WWTPs. (Another example is a system developed by Pure Energy Group.)

“(We have) the small-scale EUCOlino system, and the COCCUS complete-mix tank system,” Cummings says. “Since EUCOlino doesn’t take up much space—about the size of a shipping container—this system is great for smaller breweries or breweries without a large footprint. COCCUS is ideal for processing larger amounts of low-solids waste.

The small-scale EUCOlino system typically generates 50 kW to 200 kW of energy while processing between 1,000 to 6,000 tons of waste annually. Energy output can start at 100 kW and up for the complete-mix COCCUS tanks while processing about 7,000 tons per year.

“Our small-scale system has a compact footprint and lower processing capacity than traditional anaerobic digestion systems, making it ideal for operations with limited space available or smaller amounts of feedstock,” says Cummings. “It can also process an extreme range of feedstock options. BIOFerm’s tank system is equipped with internal REMEX paddle mixers, which ensure complete horizontal and vertical mixing to increase biogas production.”

Cummings says that’s what makes BIOFerm’s EUCOlino system is ideal for smaller microbreweries, among other benefits.

It "can process smaller amounts of waste; combat brewery waste disposal issues; and generate stable, on-site energy to offset a brewery’s load requirements,” she says. “(This) helps solve brewers’ bottom line. They ease the burden on nearby (WWTP) by lowering the strength of wastewater streams leaving breweries, which in turn lowers community and brewery infrastructure costs.”

Breweries also are ideal for anaerobic digestion because of their consistent feedstock.

“For some operations, feedstocks vary season to season, which can be a challenging when feeding the digester consistently. Breweries generally have consistent feedstock and operate year round,” says Cummings. “Small variations exist in the types of grains or yeast used but generally this does not pose a challenge for the digester.”

Operations with limited footprints often have challenges with feedstock storage.

“It’s a good rule of thumb to be able to handle or store at least three days’ worth of feedstock onsite to account for any downtime in the system. This is something to consider when thinking about a project,” says Cummings.